

Hill-Murray 8th Grade Earth Science

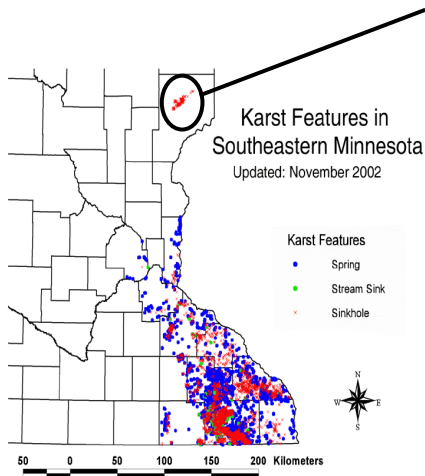
NASA Remote Sensing - Earth Science Teacher Program



MN Karst Feature Monitoring Mission

Our mission:

How does living in a sandstone karst region affect the water resources of a community?



There is a very unique area of Northern Minnesota where the land is strewn with sinkholes, springs and disappearing streams. It is an area where groundwater moves so quickly during the spring melt that you can hear the water rushing under your feet! This type of land is known as **karst**. The Hill-Murray Earth Science Students will be joining the Minnesota Pollution Control Agency in a groundwater investigation of this region. Through groundtruthing, we will verify the location of karst features and will take a variety of water quality measurements. With remote sensing, we will observe the location of karst features in the area and differences in ground and water temperatures.



MN Karst Mission UAV/Ground Plan



Students use NASA ED UAV thermal imager to locate illusive sinkholes scientists searching for 3 years.



NASA UAV data leads scientists and students to sinkholes



Students and MN scientists search for and measure line of sinkholes where ground surface water disappears 10 times on UAV IR data.



Students discovered 2 of the missing sinkholes using NASA UAV equipment



Student examines a Kart Sinkhole



RSESTeP Teacher instructs students how to take water samples for dissolved O₂, pH and other Karst test.



MN student takes water sample before tracing dye is added to Karst sink holes and nearby sewage pond.



MN State Hydrologist adds tracing dye to UAV found sinkholes and known sewage pond.



Students use NASA's ED UAV for a second flight to monitor paths of dyed water over a large area of study. Dye did show up in local town well deep beneath the surface. The whole town has been placed on bottled water.

